

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
1	BRS	L1	547	antenna with taper	USPAT; EPO; JPO; DER WENT IPM.T	2002/12/13 08:16	
2	BRS	L2	0	1 and (symmetr\$4 adj ground\$3)	USPAT; EPO; JPO; DER WENT IPM.T	2002/12/13 08:17	
3	BRS	L3	182	1 and (ground\$3)	USPAT; EPO; JPO; DER WENT IPM.T	2002/12/13 08:17	
4	BRS	L4	7	3 and disk	USPAT; EPO; JPO; DER WENT IPM.T	2002/12/13 08:38	
5	BRS	L5	10	(taper adj antenna) and ground\$3	USPAT; EPO; JPO; DER WENT IPM.T	2002/12/13 08:38	

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4	BRS	L4	7	3 and disk	USPAT; EPO; JPO; DER WENT ; IBM_T	2002/12/13 08:38	
5	BRS	L5	10	(taper adj antenna) and ground\$3	USPAT; EPO; JPO; DER WENT ; IBM_T	2002/12/13 08:38	
6	BRS	L6	14	(ground adj plane) with (disk adj shap\$2)	USPAT; US-P GPUB ; EPO; JPO; DER WENT ; IBM_T DB	2002/12/13 09:22	



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Kojima et al. (43) Pub. Date: **Aug. 8, 2002**(54) **DIRECTIONAL SWITCH ANTENNA DEVICE**(52) U.S. Cl. 343/749; 343/754; 343/819;
343/833; 343/700 MS(76) Inventors: **Suguru Kojima, Kanagawa (JP);**
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WASHINGTON, DC 20036 (US)(21) Appl. No.: **10/031,460**(22) PCT Filed: **May 23, 2001**(86) PCT No.: **PCT/JP01/04304****Related U.S. Application Data**

(60) Application No. PCT/JP01/04304, filed on May 23, 2001.

(30) **Foreign Application Priority Data**

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Publication Classification(51) Int. Cl.⁷ **H01Q 9/00**(57) **ABSTRACT**

A directionality switching antenna apparatus of the present invention is provided with radiator 102 in folded form, folded at a length of predetermined length from a feeding point of ground plane 101, with one end thereof connected to the feeding and with the other end thereof shorted with ground plane 101, a plurality of parasitic elements 103 spaced in the vicinity of radiator 102 each with an element length set to provide the parasitic elements with an electrically symmetrical relation to the center axis of radiator 102, inductors 104 loaded on respective parasitic elements 103, diodes 105 connected to ground plane 101, switching elements 106 that connects in parallel respective inductors 104 and respective diodes 105 between respective parasitic elements 103 and ground plane 101. In this way, even when positions of antenna elements become physically asymmetrical with respect to the axis of the radiator, the antenna elements are in electrically symmetrical relation, whereby it is possible to obtain equal radiation characteristics in each radiation direction.

